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(74) Agent: **DECKER, Robert, J.**; University of Virginia  
Patent Foundation, 1224 West Main Street, Suite 1-110,  
Charlottesville, VA 22903 (US).

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(71) Applicant (for all designated States except US): **UNI-  
VERSITY OF VIRGINIA PATENT FOUNDATION**  
[US/US]; 1224 West Main Street, Suite 1-110, Char-  
lottesville, VA 22903 (US).

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(72) Inventors; and

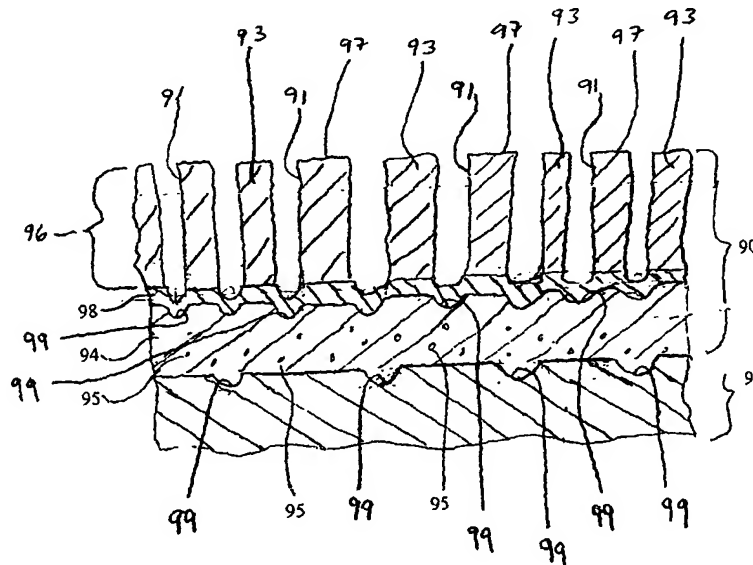
(75) Inventors/Applicants (for US only): **WORTMAN,**  
**David, J.** [US/US]; 5614 Liberty Woods Court, Hamilton,  
OH 45011 (US). **WADLEY, Haydn, N., G.** [US/US];  
4922 Barnfield Drive, Keswick, VA 22947 (US).

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(54) Title: **EXTREMELY STRAIN TOLERANT THERMAL PROTECTION COATING AND RELATED METHOD AND AP-  
PARATUS THEREOF**



(57) **Abstract:** Method and Apparatus for efficiently applying coating systems to a surface that can survive the thermal gradient that is encountered in high temperature, high heat flux environments such as a rocket engine or like using vapor or cluster deposition process such as a directed vapor deposition (DVD) approach. Method and Apparatus provides electron or other energetic beam technique to evaporate and deposit compositionally and morphologically controlled bond coats at high rate while providing a highly strain tolerant thermal barrier coating that has an improved porosity morphology between columnar grains.